REMARKS

None of the claims have been amended or cancelled. Claims 1-34 are pending and under consideration. Claims 1, 15, 29 and 32 are the independent claims. No new matter is presented in this Response.

ALLOWABLE SUBJECT MATTER:

Claims 1-18 are allowable over the prior art of record.

Claims 2-14 and 16-28 are allowable as being dependent upon the aforementioned claims 1 and 15, respectively.

Claims 30 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

REJECTIONS UNDER 35 U.S.C. §103:

Claims 29, 31, 32, and 34 are rejected under 35 U.S.C. §103(a) as being unpatentable over Tonami (U.S. Patent 6,765,856) over Hutchins et al. (U.S. Patent 5,568,465).

Applicants respectfully traverse this rejection for at least the following reason.

Regarding the rejection of independent claim 29, it is noted that claim 29 recites an equalizing method for a reproducing apparatus of a high density optical recording medium, the method comprising: detecting a difference component between a signal component of an input signal and a predetermined threshold level when the signal component of the input signal exceeds the predetermined threshold level; increasing amplitudes of high frequency spectrum components of the input signal and outputting low frequency spectrum components of the input signal without increasing Inter-Symbol Interference; and adaptively suppressing the increased amplitudes of the high frequency spectrum components by the difference component.

The Office Action relies on Tonami for a teaching of detecting a difference between a signal component of an input signal and a predetermined threshold level and for a teaching of adaptively suppressing the increased amplitudes of the high frequency spectrum components by the difference component. In particular, the Office Action cites column 14, lines 8-32 and item

16 of FIG. 9 of Tonami for such teachings.

However, a detailed review of Tonami indicates that item 16 of FIG. 9 corresponds to an adaptive equalization circuit 16 which subjects the output signal of a re-sampling digital PLL (phase locked loop) section 15 to automatic waveform equalization (column 9, lines 19-23). Meanwhile, FIGS. 15 and 16 of Tonami disclose waveforms of a reproduced signal at a moment when the level of the signal sample exceeds the threshold level so that the stored level difference between the two signal samples immediately preceding and following the signal sample at a previous moment is transmitted and output as phase error data. In other words, Tonami discloses a circuit for detecting threshold levels in a waveform and automatically equalizing the waveform.

Therefore, although Tonami discloses equalizing a waveform, Tonami fails to teach or suggest that this waveform represents an increased amplitude of a high frequency spectrum component, as recited in independent claim 29.

Furthermore, the Office Action recognizes that Tonami does not teach or suggest increasing the amplitudes of high frequency spectrum components of the input signal and outputting low frequency spectrum components of the input signal without increasing ISI and relies on Hutchins for such teaching.

Hutchins discloses that reliable detection of sector IDS and customer data field at high lineal densities, such as those used in optical recording, requires read equalization to boost the higher frequency readback signal components. This in turn reduces the dynamic range of the signal (ratio of high to low frequency signal amplitudes) and cancels inter-symbol interference (ISI). In other words, Hutchins discloses boosting the higher frequency readback signal components which are written into a control field and cancelling the ISI.

Contrary to Hutchins, independent claim 29 recites increasing amplitudes of high frequency spectrum components of the input signal and not just boosting the higher frequency readback signal components. Furthermore, independent claim 29 recites outputting low frequency spectrum components of the input signal without increasing ISI. Hutchins on the other hand does not teach or suggest outputting any type of low frequency spectrum components.

Additionally, Applicants note that although Tonami and Hutchins relate to information reproducing apparatuses, these apparatuses are configured to solve different problems from those of the present invention, for example, independent claim 29 recites outputting low

frequency spectrum components of the input signal without increasing ISI, while Hutchins eliminates the ISI. Therefore, Applicants note that there is no motivation or suggestion to combine these references, as suggested in the Office Action.

Accordingly, Applicants respectfully assert that the rejection of claim 29 under 35 U.S.C. §103(a) should be withdrawn because neither Tonami nor Hutchins, whether taken singly or combined teach or suggest each feature of independent claim 29.

Furthermore, Applicants respectfully assert that dependent claim 31 is allowable at least because of its dependence from claim 29, and because it includes additional features which are not taught or suggested by the prior art. Therefore, it is respectfully submitted that claim 31 also distinguishes over the prior art.

Regarding the rejection of independent claim 32, it is noted that claim 32 recites a reproducing apparatus for a high density optical recoding medium, comprising: detecting means, detecting a difference component between a signal component of an input signal and a predetermined threshold level when the signal component of the input signal exceeds the predetermined threshold level; amplitude increasing means, increasing and outputting amplitudes of high frequency components of the input signal and outputting lower frequency components of the input signal without increasing Inter-Symbol Interference; and amplitude controlling means, adaptively suppressing an amplitude of a high frequency component output from the amplitude increasing means, in response to the difference component, and reducing Inter-Symbol Interference of the output signal.

As noted above, Tonami discloses a circuit for detecting threshold levels in a waveform and automatically equalizing the waveform.

Therefore, although Tonami discloses means for detecting threshold levels of a waveform and means for equalizing the waveform, such means do not adaptively suppress the amplitude of the high frequency component output from the amplitude increasing means since Tonami does not teach or suggest high frequency components, as recited in independent claim 32.

As also noted above, Hutchins simply discloses boosting the higher frequency readback signal components written into a control field but does not teach or suggest outputting lower frequency spectrum components of the input signal without increasing ISI. As noted above,

Hutchins teaches cancelling the ISI entirely.

Furthermore, since Tonami and Hutchins disclose information reproducing apparatuses configured to solve different problems, Applicants note that there is no motivation or suggestion to combine these references, as suggest in the Office Action.

Accordingly, Applicants respectfully assert that the rejection of claim 32 under 35 U.S.C. §103(a) should be withdrawn because neither Tonami nor Hutchins, whether taken singly or combined teach or suggest each feature of independent claim 32.

Furthermore, Applicants respectfully assert that dependent claim 34 is allowable at least because of its dependence from claim 31, and because it includes additional features which are not taught or suggested by the prior art. Therefore, it is respectfully submitted that claim 34 also distinguishes over the prior art.

CONCLUSION:

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

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